

## ABSTRACT

A circuit for converting frequency domain information to time domain information includes an Inverse Fast Fourier Transform circuit having a length of  $N$  coefficients. The Inverse Fast Fourier Transform circuit is adapted to receive input data of length  $N$  coefficients and generate output data of length  $N$  coefficients that are circularly shifted by  $m$  coefficients. The circuit also includes Cyclical Prefix Insertion circuit adapted to insert a cyclical prefix of length  $m$ . The Cyclical Prefix Insertion circuit includes a first switch, connected to the Inverse Fast Fourier Transform circuit, a buffer, having an input connected to the first switch and an output, the buffer having a length  $m$ , and a second switch, coupled to the first switch and to the buffer. The first and second switches selectively couple the output of the buffer and the Inverse Fast Fourier Transform circuit to an output of the second switch. The buffer is reduced to length  $m$ .